Data Evaluation Report on the Acute Oral Toxicity of BAS 183 22 H (Dicamba, BAPMA salt) to Northern Bobwhite Quail (*Colinus virginianus*)

PMRA Submission Number {.....} EPA MRID Number 48718006

Data Requirement:	PMRA Data Code	{.....}
	EPA DP Barcode	402518
	OECD Data Point	{.....}
	EPA MRID	48718006
	EPA Guideline	OCSPP 850.2100

Test material: BAS 183 22 H **Purity:** 48.41% (w:w)
Common name: Dicamba-BAPMA salt
Chemical name: IUPAC: N, N-Bis-(aminopropyl) methylamine (BAPMA) salt of 3,6-dichloro-*o*-anisic acid (dicamba)
CAS name: 3,6-dichloro-2-methoxybenzoic acid (dicamba)
CAS No.: 1918-00-9 (dicamba)
Synonyms: N/A

Primary Reviewer: Christie E. Padova **Signature:** Christie E. Padova
Staff Scientist, CSS-Dynamac Corporation **Date:** 01/25/13

Secondary Reviewer: Teri S. Myers **Signature:** Teri S Myers
Senior Scientist, CDM Smith **Date:** 02/28/13

Primary Reviewer: Elizabeth Donovan **Date:** 9/7/2016
EPA/EFED/ERB VI

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Date: 2016.11.03 11:14:12 -04'00'

Reference/Submission No.: {.....}

Company Code	{.....}	[For PMRA]
Active Code	{.....}	[For PMRA]
Use Site Category	{.....}	[For PMRA]
EPA PC Code	100094	

Date Evaluation Completed: 11-3-2016

CITATION: Zok, S. 2001. BAS 183 22 H – Acute Toxicity in the Bobwhite Quail (*Colinus virginianus*) After Single Oral Administration (LD_{50}). Unpublished study performed by Experimental Toxicology and Ecology, BASF SE, 67056 Ludwigshafen, Germany. Laboratory Report No. 11W0040/10W007. Study sponsored by BASF Corporation, Research Triangle Park, NC. Study initiated November 15, 2010 and submitted March 31, 2011.

DISCLAIMER: This document provides guidance for EPA and PMRA reviewers on how to complete a data evaluation record after reviewing a scientific study concerning the acute oral toxicity of a pesticide to avian species. It is not intended to prescribe conditions to any external party for conducting this study nor to establish absolute criteria regarding the assessment of whether the study is scientifically sound and whether the study satisfies any applicable data requirements. Reviewers are expected to review and to determine for each study, on a case-by-case basis, whether it is scientifically sound and provides sufficient information to satisfy applicable data requirements. Studies that fail to meet any of the conditions may be accepted, if appropriate; similarly, studies that meet all of the conditions may be rejected, if appropriate. In sum, the reviewer is to take into account the totality of factors related to the test methodology and results in determining the acceptability of the study.

EXECUTIVE SUMMARY:

The acute oral toxicity of BAS 183 22 H (dicamba, BAPMA salt; 48.41% ai) to *ca.* 6-month old Northern bobwhite quail (*Colinus virginianus*) was assessed over 14 days. BAS 183 22 H was administered to the birds by gavage at nominal levels of 0 (carrier control), 100, 300, 750, 1500, and 3000 mg/kg bw. The 14-day acute oral LD_{50} (with 95% C.I.) was 1840 (1390 to 2420) mg/kg for combined sexes. The 14-day NOAEL was visually determined to be 100 mg/kg bw, based upon treatment-related clinical signs of toxicity at the ≥300 mg/kg levels. BAS 183 22 H (dicamba, BAPMA salt) would be classified as slightly toxic to young adult northern bobwhite quail (*Colinus virginianus*) in accordance with the classification system of the U.S. EPA.

Mortality occurred between 2 hours and 2 days following dosing, and totaled 0% in the control through 750 mg/kg bw test groups, 30% in the 1500 mg/kg bw test group (all male), and 90% in the 3000 mg/kg bw test group (five male, four female); thus, males appeared to be more sensitive than females. Birds that died following dosing had liquid contents of the intestines, with distention in some cases.

Treatment-related clinical signs of toxicity were observed at the ≥300 mg/kg levels and included apathy, paralysis of the legs, tumbling, convulsions, and/or extended diarrhea. Survivors from the 1500 mg/kg level were asymptomatic by Day 4, and the single surviving female from the 3000 mg/kg level was asymptomatic by Day 5.

Although not statistically-analyzed (as there were fewer than three survivors), the body weight of the single surviving female from the 3000 mg/kg bw level was markedly reduced compared to the control group on Days 7 (153.8 versus 190.3 g for the control) and 14 (168.3 versus 190.8 g for the control). Based upon visual assessment, food consumption of surviving animals from the 1500 mg/kg level was slightly decreased relative to the control group (13.2 versus 15.7 g/bird/day for males and 11.6 versus 13.8 g/bird/day for females) during the first week following dosing. A marked reduction in food consumption was observed in the surviving female from the 3000 mg/kg bw level compared to the control during the week following dosing (6.8 versus 13.8 g/bird/day).

This toxicity study is classified as scientifically sound and is thus acceptable, and does satisfy the guideline requirement for an acute oral toxicity study with Northern bobwhite quail.

Results Synopsis

Test Organism Size/Age (Mean Weight): *ca.* 6 months old; 157.6 to 209.1 g (combined sexes)

LD_{50}: 1840 mg/kg bw 95% C.I.: 1390 to 2420 mg/kg bw
NOAEL: 100 mg/kg bw
Endpoint(s) Affected: Mortality, clinical signs of toxicity, body weight, food consumption, and necropsy
Most Sensitive Endpoint(s): Clinical signs of toxicity

I. MATERIALS AND METHODS

GUIDELINE FOLLOWED: The study protocol was based upon procedures outlined in the U.S. EPA Pesticide Assessment Guidelines, §71-1 (1982) – taking into account the U.S. EPA Standard Evaluation Procedure EPA-540/9-85-007 (1985) – and the U.S. EPA Ecological Effects Test Guidelines OPPTS 850.2100 (1996).

Deviations from OCSPP 850.2100 (2012) included:

1. The constant dosing volume (10 g/kg bw) slightly exceeded the maximum recommended volume (5-8 mL/kg bw) for bobwhite.
2. Humidity levels (26 to 55%) were below recommendations (45 to 70%) for the majority of the study.
3. The birds were exposed to photoperiods of 8 hours light/16 hours dark. Photoperiods of 10 hours light/14 hours dark are recommended.

These deviations do not affect the scientific soundness of this study.

COMPLIANCE: Signed and dated GLP, Quality Assurance, and Data Confidentiality statements were provided. The study was conducted in accordance with the GLP Principles of the OECD and of the German "Chemikaliengesetz" (Chemicals Act).

A. MATERIALS:

1. Test Material BAS 183 22 H (Dicamba acid, BAPMA salt)

Description: Clear brown liquid

Lot No./Batch No. : 1732-10

Purity: 48.41% dicamba

Stability of compound under test conditions: The stability in the carrier (i.e., drinking water) was confirmed analytically over 6 hours.

Storage conditions of test chemicals: Room temperature

Physicochemical properties of dicamba.

Parameter	Values	Comments
Water solubility at 20°C	Not reported	
Vapor pressure	Not reported	
UV absorption	Not reported	
pKa	Not reported	
Kow	Not reported	

(OECD recommends water solubility, stability in water and light, pKa, Pow, and vapor pressure of test compound)

2. Test Organism:

Species (common and scientific names):	Northern bobwhite quail (*Colinus virginianus*)
Age at study initiation:	Young adult, *ca.*6 months old (before beginning of first egg laying period)
Weight at study initiation (mean and range):	157.6 to 209.1 g males; 162.6 to 203.9 g females
Source:	Wachtelzucht Küberich GbR, Geesdorf/Wiesentheid, Germany

(EPA recommends using either bobwhite quail or mallard duck. Birds should be at least 16 weeks old at test initiation and should be uniform in size and weight as well as phenotypically indistinguishable from wild birds).

B. STUDY DESIGN:

1. Experimental Conditions

a. Range-finding study: A range-finding study was conducted at nominal concentrations of 100, 600, and 2500 mg/kg bw. No effects were observed at the 100 mg/kg level, symptoms were observed at the 600 mg/kg level, and all birds died at the 2500 mg/kg level. No other details were provided.

b. Definitive study

Table 1: Experimental Parameters

Parameter	Details	Remarks *Criteria*
Acclimation		The diet was assayed for chemical contaminants, none of which were detected at levels of concern in view of the scope of the study (data provided).
Period:	15 days	
Conditions: (same as test or not)	Same as test	*The recommended acclimation period is a minimum of 14 days. OECD recommends a minimum of 7 days.*
Feeding:	Commercial diet for quail in meal form ("Provimi Kliba SA", Kaiseraugst, Basel, Switzerland) and municipal water were offered *ad libitum*	
Health: (any mortality observed)	0% mortality during the 3 days prior to dosing	

Parameter	Details	Remarks *Criteria*
Pen size and construction materials	0.59 x 0.45 x 0.26 m stainless steel wire mesh cages.	There was approximately 531 cm^2 floor space per bird. *Pen size and construction should conform to good husbandry practices and should not create crowding stress.* *OECD recommends that pens be suitable for the captive rearing of that species.*
Test duration	14 days	*Recommended test duration is one day for dosing and at least 14 days observation.*
Dose preparation [Indicate method of confirmation of dose]	The test substance was suspended in drinking water with a magnetic stirrer, and continuously mixed during administration.	
Mode of dose administration	Gavage, within 4 hours of preparation	*Gavage or gelatin capsule is recommended*
<u>Dose levels</u> nominal: measured:	0 (carrier control), 100, 300, 750, 1500, and 3000 mg/kg bw Verified; 97.3 to 99.5% of nominal concentrations for all levels	Nominal concentrations were based on the formulation. *Dose levels should be a minimum of 5 treatment levels unless LD_{50} is demonstrated to be greater than 2000 mg ai/kg*
<u>Solvent/vehicle, if used</u> type: amount/bw:	Drinking water 10 g/kg bw (1% by weight)	Guidance specifies that the dosing volume should not exceed 8 mL/kg bw for bobwhite quail. *The test material should be administered without a vehicle if possible. Maximum vehicle should not exceed 0.1 to 1.0% of body weight.*
<u>Number of birds per groups/treatment</u> for negative control: for solvent/vehicle control: for treated:	N/A 10 (5 per sex) 10 (5 per sex)	*Recommended number of birds in a treatment group is 10 and 10 birds for each control and vehicle group.*

Parameter	Details	Remarks *Criteria*
No. of feed withholding days before dosing	20 to 21 hours	*Food should be withheld for at least 15 hours prior to dosing.*
Test conditions Temperature: Relative humidity: Photoperiod:	 21.9 ± 0.2°C (range: 21.2 to 22.7°C) 37 ± 5% (range: 26 to 55%) 8 hours light/16 hours dark	The relative humidity was below the recommended range of 45-70%. Light intensity was 21 to 70 Lux. *The recommended photoperiod is 10 hours of light and 14 hours of dark.*
Reference chemical, if used name: concentrations tested:	None tested	

2. Observations:

Table 2: Observations

Criteria	Details	Remarks *Criteria*
Parameters measured (mortality/individual body weight at test initiation and termination/ mean feed consumption/ others)	- Mortality - Clinical signs of toxicity - Food consumption - Body weight - Necropsy	*Body weight should be measured at test initiation, on day 14 and at the end of the test if the test is extended beyond 14 days. Mortality should not be more than 10% in controls.* *Feed consumption should be measured as average daily food consumption.*
Indicate if the test material was regurgitated	Birds were observed for regurgitation for at least 1 hour after dosing; no bird regurgitated parts of the test substance.	*Regurgitation is an indication that the dose was rejected. If this problem persists, the test should be repeated.*
Groups on which necropsies were performed	All birds were subjected to a gross pathological examination.	*Gross necropsies should be performed with inspections of the GI tract, liver, kidneys, heart, and spleen.*

Criteria	Details	Remarks *Criteria*
Observation intervals	Mortality and signs of toxicity were observed four times on the day of dosing and daily thereafter. Body weights were measured individually on Days 0, 7, and 14. Average food consumption was estimated separately for sexes for Days 0 to 7, and 7 to 14.	
Were raw data included?	Yes	

II. RESULTS AND DISCUSSION:

A. MORTALITY:

Mortality occurred between 2 hours and 2 days following dosing, and totaled 0% in the control through 750 mg/kg bw test groups, 30% in the 1500 mg/kg bw test group, and 90% in the 3000 mg/kg bw test group. Males appeared to be more sensitive than females. The NOAEL for mortality were 750 mg/kg bw for males and 1500 mg/kg bw for females. For combined sexes, the 14-day LD_{50} (with 95% C.I.) was 1853 (1388 to 2477) mg/kg bw.

Birds that died following dosing had liquid contents of the intestines, with distention in some cases. No other treatment-related abnormalities were observed.

Table 3: Effect of BAS 183 22 H (Dicamba, BAPMA Salt) on Mortality of Northern Bobwhite Quail.

Treatment (mg/kg bw)		No. of Birds	Cumulative Mortality				
			2 hours	4 hours	day 1	day 2	day 14
Carrier control		10	0	0	0	0	0
100		10	0	0	0	0	0
300		10	0	0	0	0	0
750		10	0	0	0	0	0
1500		10	1 (♂)	1 (♂)	2 (♂)	3 (♂)	3 (♂)
3000		10	2 (1♂, 1♀)	4 (3♂, 1♀)	8 (5♂, 3♀)	9 (5♂, 4♀)	9 (5♂, 4♀)
NOAEL		Males: 750 mg/kg bw Females: 1500 mg/kg bw					
LD_{50} (with 95% C.I.)		Combined: 1853 (1388 to 2477) mg/kg bw					
Reference chemical	mortality	N/A					
	LD_{50}	N/A					
	NOAEL	N/A					

B. SUBLETHAL TOXICITY ENDPOINTS:

Diarrhea was observed in all dose groups on the day of dosing and was considered to be a consequence of the fasting period and not a toxic effect. No treatment-related effects were observed at the 100 mg/kg bw level. At the 300 mg/kg bw level, the birds were apathic on the day of dosing and had a paralysis of the legs during the first hour following dosing. At the 750 mg/kg bw level, the birds were apathic on the day of dosing, paralysis of the legs was observed for more than 1 hour, and tumbling was observed until Day 2. At the 1500 and 3000 mg/kg bw levels, convulsions were observed on the day of dosing, and apathy, leg paralysis, and tumbling were more pronounced than in the lower dose groups. In addition, diarrhea continued until Days 3 and 4 for the 1500 and 3000 mg/kg levels, respectively. Survivors from the 1500 mg/kg level were asymptomatic by Day 4, and the single surviving female from the 3000 mg/kg level was asymptomatic by Day 5. The NOAEL for clinical signs of toxicity was 100 mg/kg bw.

No statistically-significant differences in body weight were indicated at the 100 through 1500 mg/kg bw levels compared to the control group. Although not statistically-analyzed (as there were fewer than three survivors), the body weight of the single surviving female from the 3000 mg/kg bw level was markedly reduced compared to the control group on Days 7 (153.8 versus 190.3 g for the control) and 14 (168.3 versus 190.8 g for the control). The observed NOAEL for body weight was 1500 mg/kg bw.

Based upon visual assessment, no treatment-related effect on food consumption was observed at the 100 through 750 mg/kg bw test groups compared to the control. During the first week following dosing, food consumption of surviving animals from the 1500 mg/kg level was slightly decreased relative to the control group (13.2 versus 15.7 g/bird/day for males and 11.6 versus 13.8 g/bird/day for females). A marked reduction in food consumption was observed in the surviving female from the 3000 mg/kg bw level compared to the control during the week following dosing (6.8 versus 13.8 g/bird/day) which was then followed by a significant increase in consumption during the second week (17.6 versus 12.6 g/bird/day for the control). The NOAEL for food consumption was 750 mg/kg bw.

Table 4A: Sublethal Effect of BAS 183 22 H (Dicamba, BAPMA Salt) on Northern Bobwhite Quail, Body Weights

Mean Body Weight, g						
Treatment, (mg/kg bw)	**Males**			**Females**		
	Day 0	**Day 7**	**Day 14**	**Day 0**	**Day 7**	**Day 14**
Carrier control	181.4	195.4	195.5	178.7	190.3	190.8
100	189.4	199.3	198.2	177.8	193.6	192.1
300	189.2	202.4	201.3	183.2	193.7	193.7
750	185.5	197.9	194.2	185.4	194.7	192.6
1500	185.6	186.5	189.3	186.6	193.9	195.4
3000	178.34	---	---	179.6	153.8[(a)]	168.3[(a)]
NOAEL	1500 mg/kg bw			1500 mg/kg bw		
EC_{50}	Not determined			Not determined		

[(a)] Although not statistically-evaluated, the reduction was considered to be treatment-related.

Table 4B: Sublethal Effect of BAS 183 22 H (Dicamba, BAPMA Salt) on Northern Bobwhite Quail, Body Weight Gain

Mean Body Weight Gain %		
Treatment, (mg ai/kg bw)	**Males**	**Females**
Carrier control	8	7
100	5	8
300	7	6
750	5	4
1500	6	5
3000	N/A	2

Table 4C: Sublethal Effect of BAS 183 22 H (Dicamba, BAPMA Salt) on Northern Bobwhite Quail, Feed Consumption

Mean Feed Consumption, g/bird/day						
Treatment, (mg/kg bw)	**Males**			**Females**		
	Days 0-7	**Days 7-14**	**Overall**	**Days 0-7**	**Days 7-14**	**Overall**
Carrier control	15.7	13.0	14.4	13.8	12.6	13.2
100	15.0	12.9	14.0	16.3	13.4	14.9
300	14.7	12.6	13.7	14.3	12.9	13.6
750	14.9	12.6	13.8	13.6	11.8	12.7
1500	13.2[(a)]	16.3	14.8	11.6[(a)]	13.3	12.5
3000	---	---	---	6.8[(a)]	17.6	12.2
NOAEL	750 mg/kg bw			750 mg/kg bw		
EC_{50}	Not determined			Not determined		

[(a)] Although not statistically-evaluated, the reduction was considered to be treatment-related.

C. REPORTED STATISTICS:

The LD_{50} (with 95% C.I.) for combined sexes was determined using the probit analysis method.

Body weight data were analyzed using Dunnett's test in those groups with at least three survivors. Analyses were performed using ToxData® (PDS Pathology Data Systems Ltd.) of the testing facility. No statistical analysis was applied to separate mean responses among treatment groups for food consumption. Results were provided in terms of nominal concentrations.

LD_{50} (combined): 1853 mg/kg bw 95% C.I.: 1388 to 2477 mg/kg bw

D. VERIFICATION OF STATISTICAL RESULTS:

Methods: The reviewer statistically analyzed the endpoints for mortality using CETIS version 1.9.7.4 statistical software. All analyses were based on nominal dose concentrations. The LD50 and 95% confidence intervals were calculated using the Trimmed Spearman-Karber method. The NOAEL was visually determined based on the biological observation data.

LD_{50}: 1840 mg/kg bw 95% C.I.: 1390 to 2420 mg/kg bw
NOAEL: 100 mg/kg bw

E. STUDY DEFICIENCIES:

There were no significant deviations from U.S. EPA OCSPP Guideline No. 850.2100 affecting the scientific soundness of this study. Although the dosing volume exceeded recommendations, no regurgitation of the test article was observed. In addition, the reduced humidity level was not considered to have any adverse effect on the outcome of the study.

F. REVIEWER'S COMMENTS:

The reviewer's LD50 value was slightly lower than that calculated by the study author. The reviewer's LD50 value is reported in the Executive Summary and Conclusions sections of this report.

The reviewer calculated % weight gain values for each bird (see Table 4B and Appendix I).

The control was used for this study and a parallel running study (BASF SE Laboratory No. 11W0124/09W009).

In-life dates were December 2 to 16, 2010.

G. CONCLUSIONS:

This study is scientifically sound and is thus acceptable. Treatment-related mortality occurred at the 1500 and 3000 mg/kg bw levels, and males appeared to be more sensitive than females. Cumulative mortality was 30% at the 1500 mg/kg bw level (all male) and 90% at the 3000 mg/kg level (five male and four female). The LD_{50} (combined sexes) was 1840 mg/kg bw . Treatment-related clinical signs of toxicity were observed at the ≥300 mg/kg levels and included apathy, paralysis of the legs, tumbling, convulsions, and/or extended diarrhea. Surviving animals from the 1500 and 3000 mg/kg levels had decreases in food consumption during the week following dosing, and the single surviving female had marked decreases in body weight after 7 and 14 Days.

LD_{50}: 1840 mg/kg bw 95% C.I.: 1390 to 2420 mg/kg bw

NOAEL: 100 mg/kg bw
Endpoint(s) Affected: Mortality, clinical signs of toxicity, body weight, food consumption, and necropsy
Most Sensitive Endpoint(s): Clinical signs of toxicity

III. REFERENCES:

Finney, D.J. 1971. Probit analysis. Cambridge University Press, 3rd edition.

Dunnett, C.W. 1955. A multiple comparison procedure for comparing several treatments with control. J. Am. Statist. Assoc. 50: 1096-1121.

Dunnett, C.W. 1964. New tables for multiple comparisons with a control. Biometrics 20: 482-491.

APPENDIX I. CALCULATION OF PERCENT WEIGHT GAIN VALUES FOR INDIVIDUAL BIRDS:

Weight--males

Concentration	Day 0 weight	Day 14 weight	Day 0-14 weight gain	Day 0-14 % weight gain
0	192.9	208	15.1	8%
0	184.3	199.8	15.5	8%
0	157.6	175.8	18.2	12%
0	180.9	192.6	11.7	6%
0	191.3	201.4	10.1	5%
100	183.6	189	5.4	3%
100	170.3	177.8	7.5	4%
100	195.3	207.8	12.5	6%
100	193.6	201.1	7.5	4%
100	204.3	215.2	10.9	5%
300	209.1	217.3	8.2	4%
300	184.9	200.2	15.3	8%
300	172.2	187.5	15.3	9%
300	200.2	209.7	9.5	5%
300	179.6	191.8	12.2	7%
750	172.8	186.6	13.8	8%
750	186.1	189.8	3.7	2%
750	200.3	209.7	9.4	5%
750	180.3	191.2	10.9	6%
750	188.2	193.7	5.5	3%
1500	207.2	dead	N/A	N/A
1500	186.1	dead	N/A	N/A
1500	178.4	dead	N/A	N/A
1500	187.3	195.1	7.8	4%
1500	168.8	183.5	14.7	9%
3000	168	dead	N/A	N/A
3000	187.4	dead	N/A	N/A
3000	167.9	dead	N/A	N/A
3000	185.1	dead	N/A	N/A
3000	183.3	dead	N/A	N/A

Weight--females

Concentration	Day 0 weight	Day 14 weight	Day 0-14 weight gain	Day 0-14 % weight gain

0	184.1	195.3	11.2	6%
0	170.4	177.5	7.1	4%
0	187.5	200.5	13	7%
0	180.9	191.5	10.6	6%
0	170.8	189.4	18.6	11%
100	173.9	186.8	12.9	7%
100	181.1	199.5	18.4	10%
100	175	188	13	7%
100	184.4	199.4	15	8%
100	174.4	186.7	12.3	7%
300	162.6	169.2	6.6	4%
300	179.6	193.9	14.3	8%
300	203.9	215.4	11.5	6%
300	183	193	10	5%
300	187.1	197.2	10.1	5%
750	193.4	201	7.6	4%
750	179.7	185.3	5.6	3%
750	193.3	194.2	0.9	0%
750	183	199.4	16.4	9%
750	177.6	183.3	5.7	3%
1500	197.6	205.6	8	4%
1500	179.9	191.9	12	7%
1500	191.4	197.8	6.4	3%
1500	189.5	201	11.5	6%
1500	174.7	180.7	6	3%
3000	190.2	dead	N/A	N/A
3000	164.5	168.3	3.8	2%
3000	186.8	dead	N/A	N/A
3000	173.1	dead	N/A	N/A
3000	183.5	dead	N/A	N/A

CETIS Summary Report

OCSPP 850.2100 Acute Avian Oral Toxicity **BASF**

Batch ID:	04-3097-1482	**Test Type:**	Acute Avian Oral Toxicity	**Analyst:**	
Start Date:	02 Dec-10	**Protocol:**	OCSPP 850.2100 Acute Bird	**Diluent:**	
Ending Date:	16 Dec-10	**Species:**	Colinus virginianus	**Brine:**	
Duration:	14d 0h	**Source:**	Wachtelzucht Kuberich GbR, Germany	**Age:**	6 m
Sample ID:	06-2006-6049	**Code:**	48718006	**Client:**	CDM Smith
Sample Date:	02 Dec-10	**Material:**	Dicamba BAPMA salt	**Project:**	Unknown
Receive Date:		**Source:**	BASF Corporation		
Sample Age:	NA	**Station:**			

Batch Note: 100094 48718006 BAS 183 22H Dicamba-BAMPA salt
Sample Note: 10094 48718006 Dicamba BAPMA salt BAS 183 22H

Point Estimate Summary

Analysis ID	Endpoint	Level	mg ai/kgB	95% LCL	95% UCL	TU	Method
18-2570-3504	14dMortalityRate	LC50	1840	1390	2420		Trimmed Spearman-Kärber

14dMortalityRate Summary

C-mg ai/kgB	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Contro	10	0	0	0	0	0	0	0		
100		10	0	0	0	0	0	0	0		
300		10	0	0	0	0	0	0	0		
750		10	0	0	0	0	0	0	0		
1500		10	0.3	0	0.646	0	1	0.153	0.483	161.0%	
3000		10	0.9	0.674	1	0	1	0.1	0.316	35.1%	

14dMortalityRate Detail

C-mg ai/kgB	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Contro	0	0	0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0	0	0
300		0	0	0	0	0	0	0	0	0	0
750		0	0	0	0	0	0	0	0	0	0
1500		1	1	1	0	0	0	0	0	0	0
3000		1	1	1	1	1	1	1	1	1	0

CETIS Analytical Report

Test Code: 100094 48718006 | 16-3968-0238

OCSPP 850.2100 Acute Avian Oral Toxicity **BASF**

Analysis ID:	18-2570-3504	**Endpoint:**	14dMortalityRate	**CETIS Version:**	CETISv1.8.7
Analyzed:	28 Feb-13 15:42	**Analysis:**	Trimmed Spearman-Kärber	**Official Results:**	Yes
Batch ID:	04-3097-1482	**Test Type:**	Acute Avian Oral Toxicity	**Analyst:**	
Start Date:	02 Dec-10	**Protocol:**	OCSPP 850.2100 Acute Bird	**Diluent:**	
Ending Date:	16 Dec-10	**Species:**	Colinus virginianus	**Brine:**	
Duration:	14d 0h	**Source:**	Wachtelzucht Kuberich GbR, Germany	**Age:**	6 m

Trimmed Spearman-Kärber Estimates

Threshold Option	Threshold	Trim	Mu	Sigma	LC50	95% LCL	95% UCL
Control Threshold	0	10.00%	3.26	0.0603	1840	1390	2420

14dMortalityRate Summary

			Calculated Variate(A/B)								
C-mg ai/kg	**Control Type**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	Negative Control	10	0	0	0	0	0			0	10
100		10	0	0	0	0	0			0	10
300		10	0	0	0	0	0			0	10
750		10	0	0	0	0	0			0	10
1500		10	0.3	0	1	0.153	0.483	161.0%		3	10
3000		10	0.9	0	1	0.1	0.316	35.1%		9	10

Graphics